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# Evaluation of recommended and extended pirlimycin therapy strategies in four high somatic cell count

## A.S. Leaflet R1918

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### Summary and Implications

The objective of these investigations was to evaluate efficacy of recommended and extended therapy with pirlimycin hydrochloride (Pirsue, Pharmacia/Upjohn Co.) for gram positive subclinical intramammary infections in 4 high SCC herds. Cow and quarter *S. aureus* cure rates ranged from 0-10, and 3-50%, respectively. Variation in cure rates across herds was attributed to differences in initial herd prevalence and herd management, treatment regime, and willingness to make necessary herd management changes. Bacterial cure rates were overestimated at 12 days post treatment. SCC at day 12 post treatment was a better indicator of cure than bacterial culture. This supports that bacterial cure should be assessed at least 21-28 days post treatment. This also supports the use of extended therapies depending on organism involved and chronicity of infection, and that therapy success hinges on herd management practices and attitudes.

### Materials and Methods

All four herds were in danger of milk market loss due to elevated (chronic or recent) bulk tank SCC. Herds 1-4 had 32, 40, 57, and 115 cows, respectively. Duplicate aseptic quarter milk samples were taken for bacterial analysis at 14 days prior to treatment onset, day of initial treatment, 12 (herd 1 only) and 40 days post treatment. Composite SCC's were also analyzed at these times. Recommended therapy consisted of two intramammary treatments with one 10-ml plastet 50 mg pirlimycin HCl 24 hrs. apart. Extended therapy was the recommend treatment

series repeated three times with 48 hrs. between treatment series. All quarters of all cows were treated with recommended therapy in herds 1 and 2, only gram positive infected quarters in herd 3, and gram positive infected quarter in herd 4 with high SCC <60 days. Gram positive infections in herd 4 associated with high SCC >60 days were administered extended therapy.

### Results and discussion

Herd 1 had 87% of cows and 52% of quarters infected with *Staph. aureus* prior to treatment. Cow and quarter cure rates on days 12 and 40 post treatment were 25 and 33%, and 10 and 9%, respectively (Table 1). Herd 2 had 95% of cows and 64% of quarters infected with *S. aureus*. Cow and quarter cure rates were 3 and 12%, respectively (Table 1). SCC (Table 2) for true uninfected and *S. aureus* cows, respectively, were 98,000 and 2,267,000 (day 0); 149,000 and 1,575,000 (day 12); and 243,000 and 1,820,000 (day 40) for herd one; and 69,000 and 1,383,000 (day 0), and 115,000 and 2,505,000 (day 35) for herd two. SCC of cows apparently cured of *S. aureus* on day 12 but with *S. aureus* in same quarters as day 0 on day 40 was 1,297,000. This indicates that those cows were still infected as evidenced by a continued leucocytosis into the gland even though milk samples were bacteriologically negative. Cow and quarter cure rates for herd 3 (Table 3) were 7 and 21% for *S. aureus* (14 cows; 19 quarters) and 71 and 63% for *Strep. uberis* (7 cows; 8 quarters). Cow and quarter cure rates for *S. aureus* in herd 4 (Table 4) using recommended and extended therapy were 0 and 3% (27 cows; 63 quarters) and 0 and 6% (19 cows; 60 quarters). Cow and quarter cure rates using extended therapy on 12 quarters of 3 recent high SCC cows in herd 4 were 0 and 50%.

**Table 1. Chronic *Staphylococcus aureus* mastitis infection dynamics in two herds blitz treated with Pirlimycin HCl.**

| <i>S. Aureus</i>           | <u>Herd 1</u> |               | <u>Herd 2</u> |
|----------------------------|---------------|---------------|---------------|
|                            | <u>Day 12</u> | <u>Day 40</u> | <u>Day 35</u> |
| cow cure rate              | 25%           | 10%           | 3%            |
| quarter cure rate          | 33%           | 9%            | 12%           |
| quarter new infection rate | -             | 4%            | 10%*          |

\*50% of cured quarters (8/16) initially infected with coagulase negative staphylococci were reinfected with *S. aureus*

**Table 2. Average somatic cell counts of uninfected and *S. aureus* infected cows pre and post treatment with pirlimycin HCl.**

| <u>Bacterial Status</u>           | <u>Herd 1</u> |               |               | <u>Herd 2</u> |               |
|-----------------------------------|---------------|---------------|---------------|---------------|---------------|
|                                   | <u>Day 0</u>  | <u>Day 12</u> | <u>Day 40</u> | <u>Day 0</u>  | <u>Day 35</u> |
| Uninfected                        | 98            | 149           | 243           | 69            | 115           |
| Apparent <i>S. aureus</i> cured** |               | 1,297         |               |               |               |
| <i>S. aureus</i>                  | 2,267         | 1,575         | 1,820         | 1,383         | 2,505         |

\* cells/ml x 1000

\*\* Bacteriologically negative on day 12 but *S. aureus* positive on days 0 and 40**Table 3. Cure rates for herd 3 ( all treated with recommended pirlimycin therapy\*)**

|                   | <u>Strep. uberis**</u> | <u>Staph. aureus***</u> |         |
|-------------------|------------------------|-------------------------|---------|
| Cow cure rate     | 71%                    | 7%                      | 8%****  |
| Quarter cure rate | 63%                    | 21%                     | 24%**** |

\* Treated intramammary 2X with one 10 ml plastet 50 mg pirlimycin HCl 24 hrs. apart

\*\* 7 cows; 8 quarters      \*\*\* 14 cows, 19 quarters

\*\*\*\* Cure rates for 17 quarters with SCC &gt; 300,000 for &lt; 60 days ( 2 chronic quarters excluded)

**Table 4. Cure rates for Staph aureus(herd 4) using recommended or extended pirlimycin therapy\***

|                            | <u>Recommended therapy**</u> | <u>Extended therapy</u> |                 |
|----------------------------|------------------------------|-------------------------|-----------------|
|                            |                              | <u>chronic***</u>       | <u>recent**</u> |
| Cow cure rate              | 0%                           | 0%                      | 0%              |
| Quarter cure rate          | 3%                           | 6%                      | 50%             |
| Quarter new infection rate | 3%                           |                         |                 |

\*Recommended therapy = treated intramammary 2x with one 10 ml plastet 50 mg pirlimycin HCl 24 hrs. apart; Extended therapy = 3 series of recommended therapies 48 hrs. apart

\*\* Cows with SCC &gt; 300,000 for &lt; 60 days; (recommended-27 cows, 67 quarters, recent extended-3 cows,8 quarters)

\*\*\* Cows with SCC &gt; 300,000 for &gt; 60 days (16 cows, 48 quarters)